

**GRASSLAND BYPASS PROJECT**

**MONTHLY DATA REPORT**

**April 2010**

***DCRT DRAFT***

July 2010

**Preliminary Results**

**A cooperative effort of:**

U.S. Bureau of Reclamation  
Central Valley Regional Water Quality Control Board  
U.S. Fish and Wildlife Service  
California Department of Fish and Game  
San Luis & Delta-Mendota Water Authority  
U.S. Environmental Protection Agency  
U.S. Geological Survey

**compiled by San Francisco Estuary Institute**

## GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

---

**LIST OF TABLES FOR MONTHLY REPORT****Continuous Monitoring**

1. Continuous water monitoring at Station A (inflow to San Luis Drain), April 2010.
- 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), April 2010.
- 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), April 2010.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), April 2010.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), April 2010.

**Weekly Monitoring**

- 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.
- 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain).
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharge).
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharge).
10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).
11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).
12. Weekly water quality monitoring at Station J (Camp 13 Ditch).
13. Weekly water quality monitoring at Station K (Agatha Canal).
14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).
15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).
16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).
17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).
18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).
19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

**Monthly Monitoring**

20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from May 2009 to April 2010.
21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from May 2009 to April 2010.
22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from May 2009 to April 2010.
23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from May 2009 to April 2010.
24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from May 2009 to April 2010.
25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2010 to April 2010.
26. Summary of total suspended solids concentrations in grab water samples collected from February 2010 to April 2010.
27. Explanations of footnotes and agency abbreviations.

**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), April 2010.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>SLDMWA</b>	<b>SLDMWA</b>
<b>UNITS</b>	<b>cfs</b>	<b>µS/cm</b>
Apr-01-2010	8	4,700
Apr-02-2010	8	5,450
Apr-03-2010	13	4,390
Apr-04-2010	11	4,380
Apr-05-2010	16	4,360
Apr-06-2010	17	4,050
Apr-07-2010	13	4,070
Apr-08-2010	11	4,170
Apr-09-2010	22	4,360
Apr-10-2010	18	4,350
Apr-11-2010	13	4,400
Apr-12-2010	9	4,370
Apr-13-2010	13	4,250
Apr-14-2010	13	4,450
Apr-15-2010	9	4,580
Apr-16-2010	14	4,500
Apr-17-2010	16	4,530
Apr-18-2010	12	4,540
Apr-19-2010	13	5,080
Apr-20-2010	20	5,090
Apr-21-2010	23	4,600
Apr-22-2010	24	4,890
Apr-23-2010	21	4,970
Apr-24-2010	16	4,760
Apr-25-2010	15	5,160
Apr-26-2010	34	5,220
Apr-27-2010	27	4,550
Apr-28-2010	24	4,290
Apr-29-2010	22	4,560
Apr-30-2010	21	4,680
.	.	.
Mean	16	4,600

**Table 2a. Continuous water monitoring at Stations B and B2 (San Luis Drain Terminus), April 2010.**

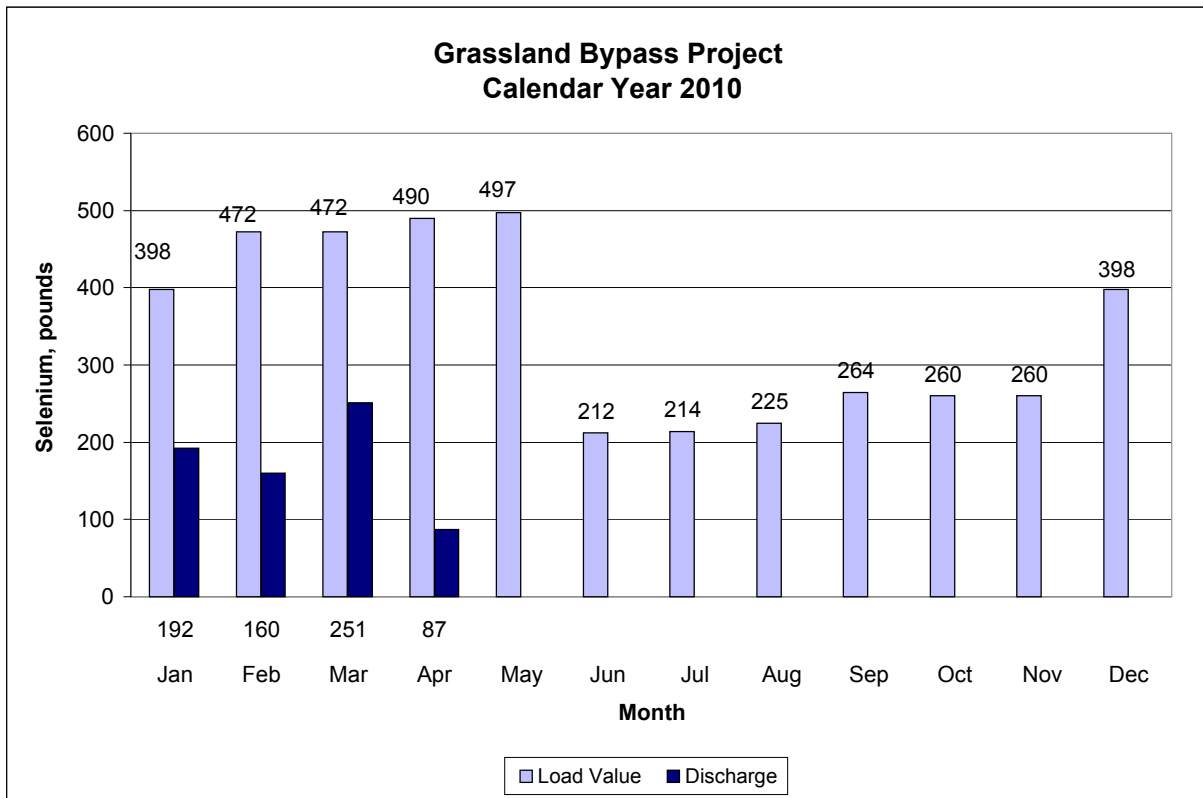
See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	SLDMWA*	SLDMWA	CVRWQCB	SLDMWA	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Apr-01-2010	10	16.8	9.1	5,250	32.2	1.7
Apr-02-2010	9	15.9	9.9	5,220	41.6	2.1
Apr-03-2010	9	15.4	8.5	5,520	29.0	1.5
Apr-04-2010	14	14.5	9.6	5,310	38.4	2.8
Apr-05-2010	15	14.0	6.0	4,370	19.7	1.6
Apr-06-2010	16	15.4	6.3	4,010	17.2	1.5
Apr-07-2010	18	15.9	7.8	4,120	35.9	3.5
Apr-08-2010	14	17.2	9.1	5,120	47.6	3.5
Apr-09-2010	11	18.0	8.5	5,670	41.8	2.5
Apr-10-2010	21	18.0	7.8	5,010	38.0	4.4
Apr-11-2010	20	15.9	7.4	5,000	35.8	3.8
Apr-12-2010	15	14.0	7.6	4,750	36.4	2.8
Apr-13-2010	10	14.5	7.5	4,880	34.6	1.9
Apr-14-2010	11	15.7	7.8	4,740	31.6	2.0
Apr-15-2010	12	17.1	8.5	5,030	34.4	2.2
Apr-16-2010	9	18.1	8.4	5,110	31.6	1.5
Apr-17-2010	11	19.4	8.7	5,010	33.1	1.9
Apr-18-2010	14	20.2	8.6	5,070	32.3	2.4
Apr-19-2010	10	20.8	8.0	5,030	27.2	1.5
Apr-20-2010	13	20.0	7.9	4,850	25.8	1.8
Apr-21-2010	19	17.8	7.8	4,940	30.4	3.2
Apr-22-2010	24	16.4	8.4	5,090	28.7	3.7
Apr-23-2010	24	16.8	9.0	5,210	29.3	3.8
Apr-24-2010	21	18.7	8.8	5,250	32.9	3.7
Apr-25-2010	14	20.6	8.2	4,840	29.2	2.3
Apr-26-2010	14	20.8	7.6	4,720	30.2	2.2
Apr-27-2010	31	21.0	7.3	4,640	34.4	5.8
Apr-28-2010	28	19.2	9.8	5,060	40.1	6.1
Apr-29-2010	22	18.1	11.0	5,050	40.1	4.7
Apr-30-2010	20	17.2	12.0	5,320	43.1	4.7
.	.	.	.	.	.	.
<b>Mean</b>	16	17.4	8.4	4,970	33.4	2.8
<b>Total Acre-feet</b>	<b>950</b>					
<b>Total (lbs)</b>						<b>87</b>

<b>Load Limitation for April 2010 (lbs)</b>	<b>490</b>
---	------------

◆To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge is measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation. Water quality data are still collected at the old Site B.

Figure 2b. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.



**Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), April 2010.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Apr-01-2010	78	15.9	3,210
Apr-02-2010	75	14.6	3,030
Apr-03-2010	73	14.3	2,960
Apr-04-2010	89	13.4	2,870
Apr-05-2010	103	14.1	2,610
Apr-06-2010	112	15.2	2,570
Apr-07-2010	106	16.5	2,560
Apr-08-2010	85	18.3	2,880
Apr-09-2010	69	17.7	2,850
Apr-10-2010	75	17.3	2,680
Apr-11-2010	77	14.7	3,150
Apr-12-2010	77	13.4	3,000
Apr-13-2010	76	15.8	2,680
Apr-14-2010	69	16.9	2,990
Apr-15-2010	63	17.7	3,070
Apr-16-2010	58	19.1	2,770
Apr-17-2010	54	19.9	3,190
Apr-18-2010	50	20.7	3,730
Apr-19-2010	43	20.7	4,010
Apr-20-2010	43	18.3	4,120
Apr-21-2010	52	16.0	4,100
Apr-22-2010	70	15.5	3,600
Apr-23-2010	73	17.1	3,500
Apr-24-2010	65	19.4	3,400
Apr-25-2010	53	20.4	3,670
Apr-26-2010	46	21.1	3,810
Apr-27-2010	55	20.0	3,940
Apr-28-2010	56	18.1	3,720
Apr-29-2010	47	17.3	3,750
Apr-30-2010	43	16.8	3,960
.	.	.	.
Mean	69	17.2	3,240

**Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), April 2010.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Apr-01-2010	231	15.4	1,360
Apr-02-2010	223	14.7	1,290
Apr-03-2010	216	14.0	1,300
Apr-04-2010	204	13.3	1,330
Apr-05-2010	204	13.6	1,310
Apr-06-2010	214	14.4	1,280
Apr-07-2010	224	15.6	1,300
Apr-08-2010	220	17.1	1,390
Apr-09-2010	214	17.4	1,440
Apr-10-2010	202	16.9	1,470
Apr-11-2010	192	15.2	1,400
Apr-12-2010	196	13.8	1,350
Apr-13-2010	198	14.6	1,360
Apr-14-2010	202	16.1	1,350
Apr-15-2010	210	17.0	1,380
Apr-16-2010	206	18.0	1,390
Apr-17-2010	193	18.8	1,400
Apr-18-2010	185	19.5	1,330
Apr-19-2010	178	19.9	1,390
Apr-20-2010	176	18.4	1,450
Apr-21-2010	175	15.7	1,500
Apr-22-2010	189	14.5	1,400
Apr-23-2010	214	15.5	1,300
Apr-24-2010	227	17.9	1,300
Apr-25-2010	223	19.8	1,400
Apr-26-2010	202	20.7	1,580
Apr-27-2010	NA	19.7	1,700
Apr-28-2010	148	17.3	1,770
Apr-29-2010	133	16.5	1,840
Apr-30-2010	136	16.3	1,640
.	.	.	.
Mean	202	16.6	1,400

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), April 2010.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	usgs	usgs	cvrwqcb	cvrwqcb
UNITS	cfs	°C	µS/cm	µg/L
Apr-01-2010	1,210	16.5	1,160	0.7
Apr-02-2010	1,170	15.4	1,200	1.2
Apr-03-2010	1,160	14.7	1,200	0.8
Apr-04-2010	1,160	14.1	1,190	0.7
Apr-05-2010	1,250	14.3	1,120	0.8
Apr-06-2010	1,380	15.0	1,020	0.8
Apr-07-2010	1,430	15.8	NA	NA
Apr-08-2010	1,460	17.2	NA	NA
Apr-09-2010	1,480	17.4	NA	NA
Apr-10-2010	1,440	17.5	NA	NA
Apr-11-2010	1,420	16.2	NA	NA
Apr-12-2010	1,430	14.8	NA	NA
Apr-13-2010	1,520	15.6	NA	NA
Apr-14-2010	1,640	16.3	NA	NA
Apr-15-2010	1,770	16.8	NA	NA
Apr-16-2010	1,800	18.1	NA	NA
Apr-17-2010	1,760	18.8	NA	NA
Apr-18-2010	1,640	19.7	NA	NA
Apr-19-2010	1,610	20.3	NA	NA
Apr-20-2010	1,600	19.4	NA	NA
Apr-21-2010	1,580	17.6	780	0.5
Apr-22-2010	1,710	16.5	740	0.6
Apr-23-2010	1,950	16.6	660	0.7
Apr-24-2010	2,260	17.6	560	0.6
Apr-25-2010	2,430	18.7	520	0.5
Apr-26-2010	2,480	19.5	520	0.5
Apr-27-2010	2,440	19.4	500	0.5
Apr-28-2010	2,410	18.1	510	0.5
Apr-29-2010	2,290	17.0	580	0.9
Apr-30-2010	2,100	16.3	570	1.0
Mean	1,664	17.1	830	0.7



Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
Feb-01-2010	15	.	.	5,060	70	.	.	.
Feb-08-2010	19	.	.	4,550	174	.	.	.
Feb-16-2010	18	.	.	5,250	77	.	.	.
Feb-22-2010	28	.	.	5,170	110	.	.	.
Mar-01-2010	38	.	.	5,200	278	.	.	.
Mar-08-2010	37	.	.	5,030	162	.	.	.
Mar-15-2010	24	.	.	4,880	99	.	.	.
Mar-22-2010	16	.	.	5,690	36	.	.	.
Mar-29-2010	7	.	.	4,240	17	.	.	.
Apr-05-2010	16	.	.	5,360	17	.	.	.
Apr-12-2010	9	.	.	5,140	14	.	.	.
Apr-19-2010	13	.	.	5,240	44	.	.	.
Apr-26-2010	34	.	.	4,630	62	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
Feb-07-2010	23	.	.	4,870	.	32.7	.	9.6
Feb-14-2010	24	.	.	4,900	.	41.4	.	8.5
Feb-21-2010	29	.	.	5,160	.	49.5	.	8.6
Mar-07-2010	41	.	.	4,880	.	59.8	.	8.6
Mar-14-2010	26	.	.	5,080	.	61.2	.	8.8
Mar-21-2010	14	.	.	5,270	.	59.9	.	9.9
Mar-28-2010	8	.	.	5,570	.	46.3	.	10.7
Apr-05-2010	16	.	.	5,200	.	50.7	.	9.2
Apr-12-2010	9	.	.	5,150	.	40.1	.	8.4
Apr-19-2010	13	.	.	5,350	.	37.2	.	9.3
Apr-26-2010	34	.	.	4,900	.	38.8	.	8.8

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	SLDMWA	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Feb-02-2010	20	12.4	8.2	3,910	41	16.7	7.2
Feb-09-2010	26	13.0	8.4	4,380	49	26.4	8.3
Feb-16-2010	26	15.0	8.4	4,770	55	39.5	8.2
Feb-23-2010	34	13.1	7.7	4,760	70	46.7	7.8
Mar-02-2010	43	14.7	8.2	4,740	69	41.3	8.7
Mar-09-2010	41	12.6	7.8	4,980	56	57.9	8.2
Mar-16-2010	28	14.5	8.4	4,930	60	55.2	8.9
Mar-23-2010	18	16.6	8.2	5,080	59	56.1	8.8
Mar-30-2010	10	17.3	8.2	5,050	41	36.1	9.3
Apr-06-2010	16	13.7	7.8	3,750	47	17.0	6.6
Apr-13-2010	10	13.7	7.8	4,540	48	34.0	7.3
Apr-20-2010	13	19.4	8.0	4,670	72	25.0	7.9
Apr-27-2010	31	20.7	8.2	4,270	55	34.4	7.3

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated **	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Feb-02-2010	100	12.1	7.9	2,350	.	0.5	1.8
Feb-09-2010	98	12.6	7.8	2,250	.	<0.4	1.8
Feb-16-2010	87	14.9	7.8	2,140	.	0.5	1.9
Feb-23-2010	e91	12.4	7.4	2,510	.	0.5	2.0
Mar-02-2010	208	15.1	8.0	1,860	.	0.9	1.8
Mar-09-2010	175	11.5	8.1	1,730	.	1.2	1.6
Mar-16-2010	116	14.2	8.1	2,290	.	0.8	2.0
Mar-23-2010	143	15.2	8.1	2,060	.	0.7	2.0
Mar-30-2010	96	16.7	7.9	2,570	.	0.5	2.3
Apr-06-2010	96	13.2	8.1	2,240	.	0.6	2.0
Apr-13-2010	66	13.8	8.1	2,460	.	<0.4	2.2
Apr-20-2010	30	15.4	8.0	3,280	.	0.5	2.8
Apr-27-2010	24	18.1	7.9	2,920	.	0.6	2.5

\*\* Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

**Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).**

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Feb-02-2010	120	12.2	7.9	2,700	3.4	2.8
Feb-09-2010	124	13.0	7.9	2,680	4.7	3.1
Feb-16-2010	113	14.8	7.9	2,850	8.9	3.3
Feb-23-2010	e125	12.8	7.6	3,460	17.5	4.2
Mar-02-2010	251	14.9	8.0	2,440	8.4	3.0
Mar-09-2010	216	12.0	8.0	2,390	11.8	2.9
Mar-16-2010	144	14.3	8.1	3,020	11.8	3.6
Mar-23-2010	161	15.5	8.1	2,450	6.3	2.8
Mar-30-2010	106	16.9	8.0	2,850	3.7	3.0
Apr-06-2010	112	13.3	8.0	2,590	3.7	2.8
Apr-13-2010	76	13.7	8.0	3,110	6.5	3.1
Apr-20-2010	43	17.6	7.7	4,320	10.4	5.1
Apr-27-2010	55	19.2	7.9	3,940	19.9	5.3

**Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).**

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
Feb-02-2010	.	8.4	2,590	46	3.5	3.2
Feb-12-2010	.	8.1	2,760	NA	5.6	3.2
Feb-17-2010	.	8.1	2,990	41	8.2	3.2
Mar-02-2010	.	8.1	2,720	39	9.6	3.3
Mar-10-2010	.	7.9	2,570	45	11.9	3.0
Mar-16-2010	.	7.3	3,130	73	11.8	3.9
Mar-24-2010	.	8.4	2,840	46	8.3	3.4
Mar-31-2010	.	8.3	3,070	45	4.3	3.4
Apr-06-2010	.	8.4	2,860	53	3.7	3.1
Apr-13-2010	.	7.9	2,880	42	6.4	3.6
Apr-28-2010	.	8.4	3,870	37	19.8	6.3

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Feb-02-2010	100	11.8	7.5	2,140	<0.4	1.3
Feb-09-2010	133	12.8	7.6	1,810	0.4	1.0
Feb-16-2010	157	13.8	7.6	1,720	0.9	0.8
Feb-23-2010	172	12.6	7.3	1,740	0.7	0.7
Mar-02-2010	401	13.9	7.4	1,550	0.8	0.9
Mar-09-2010	319	12.2	7.9	1,560	1.1	0.9
Mar-16-2010	268	13.0	7.6	1,660	0.6	1.0
Mar-23-2010	361	15.9	7.4	1,550	0.6	1.3
Mar-30-2010	233	16.6	7.3	1,580	0.5	1.0
Apr-06-2010	214	12.6	6.8	1,470	0.6	0.7
Apr-13-2010	198	13.2	7.5	1,570	<0.4	0.7
Apr-20-2010	176	17.9	6.9	1,530	0.4	0.7
Apr-27-2010	NA	19.4	6.6	1,680	0.8	0.8

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-01-2010	30	.	.	740	0.5	0.4
Feb-08-2010	20	.	.	770	1.2	0.4
Feb-16-2010	20	.	.	820	2.7	1.6
Feb-22-2010	20	.	.	750	2.1	0.4
Mar-01-2010	10	.	.	970	1.9	0.6
Mar-08-2010	5	.	.	720	2.5	0.5
Mar-15-2010	5	.	.	620	1.4	0.4
Mar-22-2010	5	.	.	570	1.3	0.3
Mar-29-2010	5	.	.	630	1.0	0.4
Apr-05-2010	5	.	.	530	1.0	0.3
Apr-12-2010	0	.	.	660	1.0	0.4
Apr-19-2010	10	.	.	560	0.6	0.3
Apr-26-2010	0	.	.	340	0.9	0.2

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-01-2010	18	.	.	940	1.2	0.8
Feb-08-2010	33	.	.	990	3.5	0.7
Feb-16-2010	24	.	.	790	1.6	0.5
Feb-22-2010	24	.	.	730	1.8	0.5
Mar-01-2010	0	.	.	820	2.5	0.6
Mar-08-2010	0	.	.	1,590	0.7	2.8
Mar-15-2010	0	.	.	1,460	0.8	3.1
Mar-22-2010	0	.	.	1,690	0.8	2.5
Mar-29-2010	0	.	.	1,820	0.7	2.4
Apr-05-2010	0	.	.	2,160	1.7	4.5
Apr-12-2010	20	.	.	650	1.0	0.6
Apr-19-2010	0	.	.	880	1.0	0.9
Apr-26-2010	0	.	.	1,920	3.3	2.6

Note: The peak in selenium is caused by no flow conditions at this site.

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-01-2010	NA	.	.	1,190	0.5	1.4
Feb-08-2010	NA	.	.	920	1.1	0.6
Feb-16-2010	NA	.	.	1,550	1.1	0.4
Feb-22-2010	NA	.	.	790	2.2	0.5
Mar-01-2010	NA	.	.	980	1.8	0.7
Mar-08-2010	NA	.	.	1,170	3.3	1.0
Mar-15-2010	NA	.	.	1,210	2.2	1.0
Mar-22-2010	NA	.	.	1,840	1.9	2.1
Mar-29-2010	NA	.	.	2,490	2.2	2.9
Apr-05-2010	NA	.	.	300	0.4	0.3
Apr-12-2010	NA	.	.	440	<0.4	0.4
Apr-19-2010	NA	.	.	2,030	1.8	2.6
Apr-26-2010	NA	.	.	2,170	1.9	2.7

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-01-2010	NA	.	.	1,900	0.4	2.3
Feb-08-2010	NA	.	.	1,400	1.2	1.3
Feb-16-2010	NA	.	.	1,550	1.3	1.6
Feb-22-2010	NA	.	.	1,410	1.3	1.2
Mar-01-2010	NA	.	.	1,560	1.3	1.7
Mar-08-2010	NA	.	.	NA	1.5	1.9
Mar-15-2010	NA	.	.	1,880	1.0	2.1
Mar-22-2010	NA	.	.	1,940	0.8	2.7
Mar-29-2010	NA	.	.	1,970	0.8	2.2
Apr-05-2010	NA	.	.	810	0.6	0.9
Apr-12-2010	NA	.	.	1,460	1.1	1.5
Apr-19-2010	NA	.	.	1,740	0.8	2.0
Apr-26-2010	NA	.	.	1,570	0.8	1.9

Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
Feb-01-2010	.	.	.	840	1.0	0.4
Feb-08-2010	.	.	.	970	5.2	0.7
Feb-16-2010	.	.	.	780	1.6	0.5
Feb-22-2010	.	.	.	730	1.8	0.7
Mar-01-2010	.	.	.	940	1.8	0.6
Mar-08-2010	.	.	.	620	2.4	0.4
Mar-15-2010	.	.	.	630	1.8	0.4
Mar-22-2010	.	.	.	550	0.8	0.3
Mar-29-2010	.	.	.	600	0.7	0.4
Apr-05-2010	.	.	.	710	1.0	0.4
Apr-12-2010	.	.	.	610	1.0	0.4
Apr-19-2010	.	.	.	530	0.5	0.3
Apr-26-2010	.	.	.	160	<0.4	<0.1

Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Feb-02-2010	288	11.9	7.5	1,730	<0.4	0.8
Feb-09-2010	389	12.7	7.8	1,340	0.5	0.5
Feb-16-2010	387	13.6	7.7	1,340	0.6	0.6
Feb-23-2010	315	12.9	7.4	1,780	0.5	0.7
Mar-02-2010	1,600	14.0	7.4	590	<0.4	0.3
Mar-09-2010	1,250	13.2	7.4	870	0.6	0.4
Mar-16-2010	860	13.5	7.1	1,020	0.7	0.5
Mar-23-2010	847	16.5	8.2	1,240	0.8	0.8
Mar-30-2010	771	17.5	8.0	1,090	0.6	0.6
Apr-06-2010	884	13.6	7.3	810	0.6	0.4
Apr-13-2010	1,040	14.2	7.4	650	0.5	0.3
Apr-20-2010	1,030	19.2	7.9	620	<0.4	0.3
Apr-27-2010	1,110	20.5	7.3	580	0.4	0.3

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
Feb-03-2010	.	.	.	1,260	<0.4	1.2
Feb-16-2010	.	.	.	1,430	0.6	1.4
Feb-23-2010	.	.	.	1,520	<0.4	1.5
Mar-03-2010	.	.	.	1,480	0.4	1.5
Mar-17-2010	.	.	.	1,510	2.1	1.1
Mar-24-2010	.	.	.	1,610	1.6	1.3
Mar-31-2010	.	.	.	1,500	1.00	1.0
Apr-14-2010	.	.	.	916	0.8	0.5
Apr-21-2010	.	.	.	927	0.7	0.5
Apr-24-2010	.	.	.	1,040	1.9	0.6

**Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>pH</b>	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>.</b>	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Feb-02-2010	855	11.9	7.8	1,390	0.9	1.0
Feb-09-2010	956	12.8	7.8	1,270	0.9	0.8
Feb-16-2010	888	13.8	7.8	1,390	1.3	0.9
Feb-23-2010	760	13.2	7.6	1,620	2.3	1.1
Mar-02-2010	2,140	14.1	7.5	670	1.2	0.4
Mar-09-2010	2,110	12.9	7.6	1,000	1.9	0.7
Mar-16-2010	1,480	13.8	7.6	1,150	1.7	0.8
Mar-23-2010	1,430	16.3	8.1	1,350	1.4	1.0
Mar-30-2010	1,260	17.6	7.9	1,180	0.7	0.8
Apr-06-2010	1,380	14.0	7.4	980	0.9	0.6
Apr-13-2010	1,520	14.8	7.6	840	0.8	0.5
Apr-20-2010	1,600	19.1	7.8	760	0.6	0.4
Apr-27-2010	2,440	19.0	7.5	500	0.6	0.3



**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from May 2009 to April 2010. Each value is the mean of 4 replicates with 10 fish in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
May-2009	98	98	98	100	93	95
Jun-2009	95	95	95	93	93	95
Jul-2009	95	98	93	98	98	100
Aug-2009	98	98	88	93	100	100
Sep-2009	100	98	98	100	100	98
Oct-2009	100	100	95	95	95	100
Nov-2009	100	93	90	83	95	100
Dec-2009	98	88	93	98	100	98
Jan-2010	98	95	98	100	98	100
Feb-2010	98	100	95	95	100	90
Mar-2010	98	95	95	100	98	100
Apr-2010	95	98	100	100	100	98

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from May 2009 to April 2010. Each value is the mean of 4 replicates with 10 fish in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
May-2009	0.48	0.41	0.41	0.42	0.42	0.42
Jun-2009	0.42	0.40	0.46	0.44	0.43	0.45
Jul-2009	0.46	0.49	0.50	0.52	0.44	0.47
Aug-2009	0.42	0.40	0.41	0.38	0.43	0.52
Sep-2009	0.43	0.41	0.42	0.45	0.39	0.43
Oct-2009	0.51	0.52	0.49	0.50	0.41	0.44
Nov-2009	0.38	0.40	0.37	0.38	0.36	0.43
Dec-2009	0.50	0.48	0.52	0.49	0.46	0.47
Jan-2010	0.43	0.49	0.50	0.48	0.49	0.41
Feb-2010	0.47	0.53	0.49	0.52	0.49	0.51
Mar-2010	0.41	0.48	0.48	0.46	0.40	0.45
Apr-2010	0.53	0.48	0.53	0.50	0.43	0.48

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from May 2009 to April 2010. Each value is the mean of 10 replicates with 1 animal in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
May-2009	80	100	90	100	100	100
Jun-2009	100	0*	30*	90	100	100
Jul-2009	90	70	100	100	90	90
Aug-2009	100	100	100	100	100	100
Sep-2009	100	100	80	90	100	100
Oct-2009	80	90	100	90	90	100
Nov-2009	90	80	90	90	70†	70†
Dec-2009	90	90	90	100	100	80
Jan-2010	100	90	90	100	90	100
Feb-2010	90	90	90	100	100	90
Mar-2010	90	100	90	80	90	90
Apr-2010	70	90	90	80	40†	80

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from May 2009 to April 2010. Each value is the mean of 10 replicates with 1 animal in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
May-2009	22.1	31.8	36.3	29.3	29.9	23.6
Jun-2009	42.9	4.8*	13.6*	35.9	28.2	28.6
Jul-2009	34.2	21.6	38.5	32.1	26.4	22.4
Aug-2009	42.6	40.9	38.5	37.8	30.6	24.7
Sep-2009	34.8	43.3	26.8	25.1	28.7	22.7
Oct-2009	36.7	32.8	42.2	33.5	31.1	28.8
Nov-2009	38.5	21.3	29.1	21.8	16.4	18.6
Dec-2009	30.2	30.7	35.4	35.2	39.7	30.9
Jan-2010	39.7	32.3	44.1	30.7	34.4	33.8
Feb-2010	22.9	22.1	26.2	25.7	23.1	25.4
Mar-2010	23.6	28.4	23.3	19.5	25.0	16.6
Apr-2010	34.8	41.4	39.2	24.1	20.1	28.5

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from May 2009 to April 2010. Each value is the mean of 4 replicates.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
May-2009	21.6	33.2	25.2	11.4*	21.4	22.8
Jun-2009	19.8	20.2	24.4	21.7	20.1	17.0
Jul-2009	22.5	28.4	28.2	26.8	22.9	19.7
Aug-2009	21.7	26.4	24.6	26.6	22.0	23.0
Sep-2009	31.6	32.6	25.6	28.9	27.6	22.3
Oct-2009	35.3	30.5	32.2	26.8	20.4	19.2
Nov-2009	20.6*	39.0	35.8	33.5	26.2	28.1
Dec-2009	6.8*	28.5	21.7	26.7	20.9	24.1
Jan-2010	0.2*	27.5	1.4*	28.9	20.8	19.8
Feb-2010	19.1*	36.0	31.7	29.9	28.7	23.1
Mar-2010	17.6	28.4	27.8	27.4	19.5	15.5
Apr-2010	5.2*	22.2	25.1	33.2	26.3	24.7

\*\*\* = Statistically significant.

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2010 to April 2010.**

See Table 27 for explanation of footnotes and agency abbreviations

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
Feb-22-2010	23	>0.4	6.0	<0.4	<0.4
Feb-24-2010	45	>0.4	15	0.6	0.6
Feb-26-2010	51	0.5	19	0.7	0.7
Mar-08-2010	61	0.7	15	0.9	0.6
Mar-10-2010	63	0.8	12	0.8	0.8
Mar-12-2010	53	0.8	11	0.5	0.6
Apr-05-2010	20	0.5	4.7	0.5	0.7
Apr-07-2010	35	0.4	3.9	0.5	0.4
Apr-09-2010	43	0.4	10	0.4	0.6

**Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, February 2010 to April 2010.**

See Table 27 for explanation of footnotes and agency abbreviations

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Feb-22-2010	104	58	75	34	17
Feb-24-2010	80	30	58	40	14
Feb-26-2010	93	63	90	33	15
Mar-08-2010	66	82	86	9	18
Mar-10-2010	59	137	128	57	17
Mar-12-2010	67	194	168	15	21
Apr-05-2010	39	64	83	20	8
Apr-07-2010	77	82	60	20	10
Apr-09-2010	105	155	119	25	21

**Table 27. Explanations of footnotes and agency abbreviations.**

<b>Footnote</b>	<b>Explanation</b>
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal (p<0.05)
**	Sample re-analyzed and result confirmed.
L	Result may be biased low. Sample was not preserved in the field
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10 <sup>6</sup> cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
❖	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated